IN THE CLAIMS

Rewrite claims 43, 48, 50, 51, 56 and 66 to read as follows:

C5

43. An atomic force microscope as recited in claim 42, wherein light reflected to said position detector does not pass through said steering lens.

C6

48. A method of operating an atomic force microscope having an optical lever system with a light source, a cantilever, and a position detector, and further having a steering lens assembly attached to a steering mechanism, the method comprising the steps of:

generating light;

directing said light onto said cantilever using said steering lens assembly so that said light strikes a substantially fixed position on said cantilever during a movement of said scanning mechanism; and

receiving a reflected light reflected from said cantilever using said position detector to detect an angular deflection of said cantilever.

C7 w/ 1

50. A scanning force microscope device comprising in combination:

a. a sensing probe having a substantially reflective surface on one side and a scanning tip on the opposite side, said tip adapted to be positioned adjacent a surface to be scanned;

b. illuminating means for generating a radiant energy beam and for applying said beam to said reflective surface;

c. position control means coupled to said sensing probe for moving said scanning tip substantially parallel to a surface to be scanned in a predetermined direction and for moving said scanning tip orthogonal to the surface to follow the contours of the surface;

d. beam positioning means for directing said radiant energy beam to follow said sensing probe through lateral motion of said probe; and

e. detector means adapted to receive the energy beam reflected from said reflective surface and operable in response to movement of said reflected energy beam

corresponding to position changes to said sensing probe relative to the surface to be scanned to produce a motion representing signal corresponding to tip movement following the contours of the scanned surface, whereby tip motion in a direction orthogonal to scanning motion results in a series of electrical signals corresponding to and representative of the surface contours of the scanned surface.

51. In a scanning force microscope having a sensing lever having a tip mounted for movement in response to relative vertical distance changes between the tip and a sample surface as the tip moves laterally with respect to the sample surface, apparatus for sensing the vertical movement of the tip relative to the surface being scanned and for creating a signal representative of such vertical movement comprising:

a. a reflective surface carried by the sensing lever;

b. an energy source positionally decoupled from lateral movement of the sensing lever for emitting a radiant

energy beam including focusing means for applying said beam to said reflective surface;

c. control means for moving the sensing lever and tip laterally over the surface of a sample to be scanned including beam directing means for causing said radiant energy beam to follow the lateral motion of the sensing lever;

d. driving means for moving the sensing lever and tip in a vertical direction towards and away from the surface of the sample to be examined; and

e. detection means positioned to receive said energy beam after reflection from said reflective surface for signaling changes in the beam position, said changes corresponding to and being representative of vertical displacement of the sensing lever tip during lateral motion over the sample surface.

66. In a scanning force microscope having a lever with a reflecting surface and a sensing tip wherein the sensing tip is responsive to forces

resulting from the proximity of the sensing tip to a sample surface under investigation, apparatus for sensing the response of the tip to the forces comprising:

a. a light beam source for generating a light beam;

b. a motion control device for creating relative motion between the sensing tip and the sample surface, said motion control device having a fixed end and a free end, said free end being adapted to provide relative scanning motion between the scanning tip and the sample surface;

c. at least one lens interposed in said beam of light between said source and the reflecting surface, said lens fixed to the frame of reference of said free end of said motion control device such that said lens causes said beam to track laterally the motion of said reflecting surface; and

d. a detection device for detecting light reflected from the reflecting surface.